МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

Харківська національна академія міського господарства

ТЕСТОВІ ЗАВДАННЯ

з англійської мови

(для студентів 1-2 курсів спеціальностей
6.070800 –«Екологія та охорона навколишнього середовища»,
6.092600 – «Водопостачання та водовідведення», 6.092100 –
«Теплогазопостачання та вентиляція»)

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Тестові завдання з англійської мови (для студентів 1-2 курсів спеціальностей 6.070800 – «Екологія та охорона навколишнього середовища», 6.092600 – «Водопостачання та водовідведення», 6.092100 – Теплогазопостачання та вентиляція»).
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INTRODUCTION

These tests have been specially designed to provide essential practice for students specializing in **Ecology and Environmental Protection, Wastewater Treatment, Heat and Gas Supply & Ventilation.**

The course consists of ***9*** tests. Each test contains the following:

* The test in Modern English Grammar and the vocabulary.
* The text followed by a number of questions.

The specific benefits of this method of presentation are as follows:

1. It provides the reader with a quick, efficient, and effective means of grasping the essential subject matter.

2. It keeps the reader *active* in the learning process and increases comprehension level.

When teachers use texts for reading, they are often too concerned with what was written at the expense of *how*. Reading in any language is an affective as well as a cognitive process. The teacher's role is not that of corrector or judge, but rather that of enabler. The teacher assists with language, error, but should not replace the student's perceptions with his or her own.

The following tests are to change the attitude of both teachers and students to classroom activities. The teacher who brings these tests into the study is not depriving the students of language practice, but is, instead, providing a richer context for such practice. These tests can be used for self-study, to check language and to offer a diagnostic for the students' language development.

All the students can be directed to **the Wordlist.**

TEST 1

Part A

STRUCTURE AND WRITTEN EXPRESSION

Directions: In this part each problem consists of an incomplete sentence. Below the sentence are four choices marked (A), (B), (C), and (D). You should find the one choice which best completes the sentence.

1. People have ….. increased food production from the world's ecosystems, in part by converting large areas to highly managed agro-ecosystems – croplands, pastures, feedlots – that provide the bulk of the human food supply.

(A) dramatically

(B) perfectly

(C) intensely

(D) accordingly

2. The condition of agro-ecosystems from the standpoint of food production is ….. .

(A) unmixed

(B) unchangeable

(C) mixed

(D) mixed-up

3. ….. crop yields are still rising, the underlying condition of agro-ecosystems is declining in much of the world.

(A) However

(B) Since

(C) For

(D) Although

4. Soil degradation is a concern on ….. sixty-five per cent of agricultural land.

(A) as much as

(B) as much again

(C) much the same

(D) so much for

5. The outlook ….. fish production – also a major source of food – is more problematic.

(A) for

(B) at

(C) in

(D) of

6. People now withdraw annually about half of the water readily available for use from ..... .

(A) oceans

(B) rivers

(C) seas

(D) marshes

7. Freshwater wetlands, which store water and moderate flood flows, have been reduced by as much as ….. per cent worldwide.

(A) twenty

(B) thirty

(C) forty

(D) fifty

8. Water quality is degraded directly through chemical and nutrient pollution and indirectly when the capacity of ecosystems ….. water is degraded and when land-use changes increase soil erosion.

(A) to be filtering

(B) to filter

(C) to have filtered

(D) to have been filtering

9. ….. the changes in Earth's chemical cycles – carbon, nitrogen, and water cycles – is essential to understanding the condition of ecosystems.

(A) Tracking

(B) Tracing

(C) Tracings

(D) Tracks

10. These cycles serve as the basic metabolism of the biosphere, affecting how ….. ecosystem functions and linking them all on a global level.

(A) each

(B) another

(C) every

(D) none

Part B **TEXT 1**

HOW VIABLE ARE EARTH'S ECOSYSTEMS?

Read and translate the text using a dictionary

Try to imagine Earth without ecosystems. Ecosystems are the productive engines of the planet – communities of species that interact with each other and with the physical setting they live in. They surround us as forests, grasslands, rivers, coastal and deep-sea waters, islands, mountains – even cities. Each ecosystem represents a solution to a particular challenge to life, worked out over millennia; each encodes the lessons of survival and efficiency as countless species scramble for sunlight, water, nutrients, and space.

The fact is, we are utterly dependent on ecosystems to sustain us. From the water we drink to the food we eat, from the sea that gives up its wealth of products, to the land on which we build our homes, ecosystems yield goods and services that we can't do without. Ecosystems make the Earth habitable: purifying air and water, maintaining biodiversity, decomposing and recycling nutrients, and providing myriad other critical functions.

Harvesting the bounty of ecosystems roots our economies and provides us employment, particularly in low- and middle-income countries. Agriculture, forestry, and fishing are responsible for one of every two jobs worldwide and

seven of ten jobs in sub-Saharan Africa, East Asia, and the Pacific. In a quarter of the world's nations, crops, timber, and fish still contribute more to the economy than industrial goods.

Ecosystems feed our souls as well, providing places for religious expression, aesthetic enjoyment, and recreation. In every respect, human development and human security are closely linked to the productivity of ecosystems. Our future rests squarely on their continued viability.

If our life on Earth is unimaginable without ecosystems, then we need to know how to live better within them. The world is large, nature is resilient, and humans have been altering the landscape for tens of thousands of years, all of which makes it easy to ignore warning signs that human activities might be damaging the capacity of an ecosystem to continue to deliver goods and services.

In fact, many nations and societies have completely altered the landscape, converting wetlands, prairies, and forests to other uses, and continue to prosper. What was once 200 Mha of tallgrass prairie in the heartland of the United States has been converted almost entirely to cropland and urban areas. The once-extensive forests of Europe have suffered much the same fate. These conversions have brought obvious benefits, such as stable food supplies and industrial production, that have made the United States and some European nations economic power houses. But they also impose costs – eroded topsoil, polluted wells and waterways, reduced fish yields, and lost wildlands and scenic places – that threaten to erode the wealth and quality of life these nations enjoy.

In spite of the costs of degrading ecosystems and our dependence on their productivity, we know surprisingly little about the overall state of Earth's ecosystems or their capacity to provide for the future. We need to know: How viable are Earth's ecosystems today? How best can we manage ecosystems so that they remain healthy and productive in the face of increasing human demands?

It is easy to lose touch with our link to ecosystems, despite their importance. For the millions of us who depend directly on forests or fisheries for our survival, the vital importance of ecosystems is a fact of daily life. But for the millions of us who

live in cities or suburbs and have transitioned from working the soil to working at computer keyboards, our link to ecosystems is less direct. We buy our food and clothing in stores and depend on technology to deliver water and energy. We take for granted that there will be food in the market, that transportation and housing will be available, and all at reasonable cost. Too often, we're only reminded of our link to natural systems when a fishery collapses, a reservoir goes dry, or air pollution begins to make us sick – when the flow of goods and services is disrupted. Then we suddenly become aware of the real value of these resources and the potential economic and biological costs of mismanagement.

Unfortunately, mismanagement of ecosystems abounds. Worldwide, human overuse and abuse of major ecosystems from rainforests to coral reefs, to prairies, grasslands have degraded or destroyed hectare upon hectare of once-productive habitat. This has harmed wildlife, to be sure, as the number of endangered species attests. But it has also harmed human interests by depleting the flow of the very goods and services we depend on.

Decline in the productive capacity of ecosystems can have devastating human costs. Too often, the poor are first and most directly affected by the degradation of ecosystems. Impoverished people are generally the most dependent on ecosystems for subsistence and cash, but usually exert the least control over how ecosystems are used or who reaps the benefits of this use.

In many areas, declining agricultural productivity, diminished supplies of freshwater, reduced timber yields, and declining fish harvests have already taken a significant toll on local economies.

Many of the challenges we face today – deforestation, soil erosion, desertification, salinization, and loss of biodiversity – were problems even in ancient times. What is different now is the scale, speed, and long-term nature of modern civilization's challenges to Earth's ecosystems. Before the Industrial Revolution, environmental degradation was much more gradual – occurring over hundreds or thousands of years – and relatively localized. The cumulative actions of rapidly growing and industrializing societies, however, have given rise to more

complex problems. Acid rain, greenhouse gas emissions, ozone depletion, toxic waste, and large-scale industrial accidents are examples of such problems with global or regional consequences.

In every respect, human development and human security are closely linked to the productivity of ecosystems. Our future rests squarely on their continued viability.

Indicate whether each of the following is true or false by writing 'T' or 'F' in the space provided.

….. 1. We take for granted that there will be food in the market, that transportation and housing will be available, and all at reasonable cost.

….. 2. In every respect, human development and human security are closely linked to the productivity of ecosystems.

….. 3. Many of the challenges we face today – deforestation, soil erosion, desertification, salinization, and loss of biodiversity – were not problems even in ancient times.

….. 4. If you can imagine your life on Earth without ecosystems, then you need to form an idea of living without them.

….. 5. In fact, it is easy to lose touch with our link to ecosystems, despite their importance.

TEST 2

Part A

STRUCTURE AND WRITTEN EXPRESSION

Directions: In this part each problem consists of an incomplete sentence. Below the sentence are four choices marked (A), (B), (C), and (D). You should find the one choice which best completes the sentence.

1. The erosion of global biodiversity ….. the past century is alarming.

(A) over

(B) above

(C) near

(D) down

2. ….. losses have occurred in virtually all types of ecosystems, much of it simply by loss of habitat area.

(A) Major

(B) Minor

(C) Insignificant

(D) Improbable

3. Forest cover ….. by at least 20 per cent and perhaps by as much as 50 per cent worldwide; some forest ecosystems, such as the dry tropical forests of Central America, are virtually gone.

(A) had been reduced

(B) have been reduced

(C) has been reduced

(D) would have been reduced

4. More than 50 per cent of the original mangrove area in many countries is gone; wetlands area has shrunk ….. about half; and grasslands have been reduced by more than 90 per cent in some areas.

(A) to

(B) with

(C) from

(D) by

5. ..... tundra, the Arctic, and deep-sea ecosystems have emerged relatively unscathed.

(A) Simply

(B) Singly

(C) Fairly

(D) Only

6. Even if ecosystems ….. their original spatial extent, many species would still

be threatened by pollution, overexploitation, competition from invasive species, and habitat degradation.

(A) had retained

(B) have retained

(C) have been retained

(D) would retain

7. ….. the health of species diversity, freshwater ecosystems are far and away the most degraded, with 20 per cent of freshwater fish species extinct, threatened, or endangered in recent decades.

(A) In set terms

(B) In metric terms

(C) In terms of

(D) On equal terms

8. Forest, grassland, and coastal ecosystems ….. face major problems as well.

(A) all

(B) each

(C) none

(D) other

9. The rapid rise in the incidence of diseases ….. marine organisms, the increased prevalence of algal blooms, and the significant decreases in amphibian populations all attest to the severity of the threat to global biodiversity.

(A) affecting

(B) affected

(C) affect

(D) affects

10. ….. the loss of medicines, useful genetic materials, and ecotourism revenues this erosion of biodiversity represents, it also threatens the basis of ecosystem productivity.

(A) Instead of

(B) Inside

(C) Midway

(D) Apart from

Part B **TEXT 2**

SOURCES OF WEALTH AND WELL-BEING

Read and translate the text using a dictionary

All organisms have intrinsic value; grasslands, forests, rivers, and other ecosystems do not exist to serve humans alone. In the modern world, virtually every human use of the products and services of ecosystems translates into an impact on those ecosystems. Thus, every use becomes either an opportunity for enlightened management or an occasion for degradation.

Responsible use of ecosystems faces fundamental obstacles, however. Typically, we don't even recognize ecosystems as cohesive units because they often extend across political and management boundaries. We look at them in pieces or concentrate on the specific products they yield. We miss their complexity, the interdependence of their organisms – the very qualities that make them productive and stable.

The challenge for the 21st century, then, is to understand the vulnerability and resilience of ecosystems, so that we can find ways to reconcile the demands of human development with the tolerance of nature. That requires learning to look at our activities through the living lens of ecosystems. In the end, it means adopting an ecosystem-oriented approach to managing the environment – an approach that respects the natural boundaries of ecosystems and takes into account their interconnections and feedback.

Ecosystems are not just assemblages of species, they are systems combined of organic and inorganic matter and natural forces that interact and change. The energy that runs the system comes from the Sun; solar energy is absorbed and turned into food by plants and other photosynthesizing organisms at the base of food chains. Water is the crucial element flowing through the system. The amount

of water available, along with the temperature extremes and the sunlight the site receives, largely determine what types of plants, insects, and animals live there, and how the ecosystem is categorized.

Ecosystems are dynamic, constantly remaking themselves, reacting to natural disturbances and the competition among and between species. It is the complex, local interaction of the physical environment and the biological community that gives rise to the particular package of services and products that each ecosystem yields; it also is what makes each ecosystem unique and vulnerable.

Scale also is important. A small bog, a single sand dune, or a tiny patch of forest may be viewed as an ecosystem, unique in its mix of species and microclimate – a microenvironment. On a much larger scale, an ecosystem refers to more extensive communities – a 100 or 1,000 km^2 forest, or a major river system, each having many such microenvironments.

Divisions between ecosystems are less important, however, than the linkages between them. Grasslands give way to savannas that segue into forests. Freshwater becomes brackish as it approaches a coastal area. Polar, island, mountain, and even urban ecosystems blend into and add to the mix. All these systems are tightly knit into a global continuum of energy and nutrients and organisms – the biosphere in which we live.

The benefits that humans derive from ecosystems can be direct or indirect. Direct benefits are harvested largely from the plants and animals in an ecosystem in the form of food and raw materials. These are the most familiar ‘products’ an ecosystem yields – crops, livestock, fish, game, lumber, fuelwood, and fodder. Genetic resources that flow from the biodiversity of the world’s ecosystems also provide direct benefits by contributing genes for improving the yield and disease resistance of crops, and for developing medicines and other products.

Indirect benefits arise from interactions and feedback among the organisms living in an ecosystem. Many of them take the form of services, like the erosion control and water purification and storage that plants and soil micro-organisms provide in a watershed, or the pollination and seed dispersal that many insects,

birds, and mammals provide. Other benefits are less tangible, but nonetheless highly valued: the scenic enjoyment of a sunset, for example, or the spiritual significance of a sacred mountain or forest grove. Every year, millions of people make pilgrimages to outdoor

Holy places, vacation in scenic regions, or simply pause in a park or their gardens to reflect or relax. As the manifestation of nature, ecosystems are the psychological and spiritual backdrop for our lives.

Some benefits are global in nature, such as biodiversity or the storage of atmospheric carbon in plants and soil. Others are regional; watershed protection that prevents flooding far downstream is an example. But many ecosystem benefits are local, and these are often the most important, affecting people directly in many aspects of their daily lives. Homes, industries, and farms usually get their water supplies from local sources, for instance. Jobs associated with agriculture and tourism are local benefits as well. Urban and suburban parks, scenic vistas, and the enjoyments of backyard trees and wildlife are all local products that define our sense of place.

Because so many ecosystem goods and services are enjoyed locally, it follows that local inhabitants often suffer most when these benefits are lost. By the same token, it is local inhabitants who usually have the greatest incentive to preserve the ecosystems they depend on. In fact, local people hold enormous potential both for managing ecosystems sustainably and for damaging them through careless use. But local communities rarely exert full control over the ecosystems they inhabit; with the market for ecosystem goods becoming increasingly global, outside economic forces and government policies can overwhelm the best local intentions.

Indicate whether each of the following is true or false by writing 'T' or 'F' in the space provided.

….. 1. Some benefits are global in nature, such as biodiversity or the storage of atmospheric carbon in plants and soil.

….. 2. Divisions between ecosystems are more important, however, than the

linkages between them.

….. 3. Responsible use of ecosystems faces fundamental obstacles, however.

….. 4. The benefits that humans derive from ecosystems can be only just indirect.

TEST 3

Part A

STRUCTURE AND WRITTEN EXPRESSION

Directions: In this part each problem consists of an incomplete sentence. Below the sentence are four choices marked (A), (B), (C), and (D). You should find the one choice which best completes the sentence.

1. Agriculture was developed for a simple but fundamental purpose – to provide ….. human nutrition.

(A) inadequate

(B) adequate

(C) unnatural

(D) low-calorie

2. Globally, agro-ecosystems produce enough food to provide every person on the planet with 2,757 kcal each ….., which is sufficient to meet the minimum human requirement for nutrition.

(A) week

(B) day

(C) hour

(D) minute

3. One of the most notable changes in demand is the dramatic increase in ….. consumption, particularly in the developing world.

(A) meat

(B) vegetables

(C) fruit

(D) fish

4. ….. has been dubbed the ‘livestock revolution’.

(A) This

(B) These

(C) That

(D) Those

5. ….., many people do not have adequate access to that food, and an estimated 790 million people are chronically undernourished.

(A) But

(B) If

(C) However

(D) That

6. Global demand for food is ….. increasing significantly, driven by population growth, urbanization, and growth in per capita income.

(A) soon

(B) here

(C) there

(D) still

7. Global demand for cereals is projected to increase ….. 40 per cent, with 85 per cent of the increase in demand coming from developing countries.

(A) by

(B) to

(C) in

(D) on

8. One measure of the …..-….. productive capacity of an agro-ecosystem is the condition of its soil.

(A) short-term

(B) long-term

(C) short-range

(D) short-dated

9. Natural weathering processes and human management practices can ….. affect

soil quality.

(A) very

(B) too

(C) so

(D) both

10. One of the most common management techniques used to maintain the condition of agro-ecosystems, particularly intensively cultivated systems, ….. replenish soil nutrients with organic manure or inorganic fertilizers containing nitrogen, phosphorus, and potassium.

(A) was to

(B) is to

(C) am to

(D) are to

Part B **TEXT 3**

WATER FILTRATION AND PURIFICATION

Read and translate the text using a dictionary

At every stage of its journey between earth and sky, water can pick up pollutants and waste – as it flows from a spring into streams, rivers, and the sea; as it pools into ponds and lakes; when it returns from the atmosphere as rain; when it soaks back into the soil after use on croplands or as effluent from sewage systems.

Fortunately, ecosystems can cleanse the water for us.

* Soil is inhabited by micro-organisms that consume and recycle organic material, human and animal feces, and other potential toxins and pathogens. Deeper rocky layers of an aquifer may continue the cleansing process as water seeps through.

* Plants and trees hold soil in place as the water filters through. The vegetation interacts with fungi and soil micro-organisms to generate many of soil’s filtering capabilities.

* Freshwater bodies dilute pollutants where large quantities of municipal, agricultural, and industrial waters are drained or released.

* Wetlands intercept surface run-off, trap sediments from floodwaters, sequester metals, and excel at removing nitrogen and minerals from the water. A hectare of cat-tail marsh can consume three times as many nutrients as a hectare of grassland or forest.

In many places, however, we are straining nature's ability to filter and purify water. Where land is stripped of vegetation or overcultivated, rainwater flows downstream –

unfiltered – over compacted and crusted soil. We have drained and converted half of all wetlands worldwide, and we add levels of pollutants to watersheds that overwhelm their natural purification and dilution capacities.

To an extent, we can replace ecosystems' natural cleaning service with wastewater treatment plants, chlorination and other disinfectant processes, and artificial wetlands. But these options typically are expensive and do not provide the many other benefits supplied by forests and natural wetlands, such as wildlife habitat, open space, and flood protection.

The Costs of Clean Water

Here are some global and local indicators of our dependence on the water filtration and purification services that ecosystems provide. The human and economic costs of trying to replace them can be high.

* **Percentage of the world's population that lacks access to clean drinking water:**

28 per cent, or as many as 1.7 billion people.

* **Number of people who die each year because of polluted drinking water, poor sanitation, and domestic hygiene:**

5 million. Additionally, water-borne diseases such as diarrhea, ascariasis, dracunculiasis, hookworm, schistosomiasis, and trachoma cause illness in perhaps half the population of the developing world each year.

* **Percentage of urban sewage in the developing world that is discharged into**

rivers, lakes, and coastal waters without any treatment:

90 per cent.

* **Amount spent on bottled water worldwide in 1997:**

$42 billion.

*** Typical cost to desalinize seawater:**

$1.00 -$1.50 per cubic metre.

Indicate whether each of the following is true or false by writing 'T' or 'F' in the space provided.

….. 1. Ecosystems can't cleanse the water for us.

….. 2. We can replace ecosystem's natural cleaning service with wastewater treatment plants, chlorination and other disinfectant processes, and artificial wetlands.

….. 3. A hectare of cat-tail marsh can consume two times as many nutrients as a hectare of grassland or forest.

….. 4. Plants and trees do not hold soil in place as the water filters through.

….. 5. Deeper rocky layers of an aquifer may continue the cleansing process as water seeps through.

….. 6. Yet the water is ancient, having circulated between earth and sky for aeons. We rely on the land to purify the water as it moves through this cycle.

TEST 4

Part A

STRUCTURE AND WRITTEN EXPRESSION

Directions: In this part each problem consists of an incomplete sentence. Below the sentence are four choices marked (A), (B), (C), and (D). You should find the one choice which best completes the sentence.

1. South and Southeast Asia, where agricultural production systems are among the most intensive in the world, have soil that is the most ….. .

(A) degraded

(B) elevated

(C) enriched

(D) graded

2. In these regions, soil is significantly ….., more subject to erosion, and more likely to be salinized, acidic, depleted of potassium, and saturated with aluminium than the soil of most other regions.

(A) steep

(B) steeper

(C) steepest

(D) –

3. Agriculture is perhaps the ….. significant human influence on the world's water cycle, affecting quantity, timing, and quality of water available to freshwater systems.

(A) more

(B) most

(C) less

(D) least

4. ….. a global scale, agriculture accounts for the greatest proportion of total freshwater withdrawal of any sector of human activity.

(A) At

(B) On

(C) In

(D) To

5. Agriculture also has the highest consumptive use of water (use that results ….. returning water to the atmosphere, rather than back to streams or groundwater).

(A) in

(B) to

(C) from

(D) –

6. Approximately 70 per cent – 2,800 km^3 – of the 4,000 km^3 of water humans withdraw from freshwater systems each year is used for ….. .

(A) drinking

(B) irrigation

(C) cooking

(D) cleaning

7. Of the water used for irrigation, 50-80 per cent is returned to ….. atmosphere or otherwise lost to downstream users.

(A) a

(B) an

(C) the

(D) –

8. As a consequence, irrigation can significantly ….. river flows and aquifer levels and can shrink lakes and inland seas.

(A) increase

(B) decrease

(C) extend

(D) enlarge

9. Withdrawals to irrigate cotton and other crops shrank the Aral Sea to one-third of its original volume by the early 1990s, thus increasing its ….. .

(A) salinity

(B) coolness

(C) freshness

(D) boundlessness

10. For 82 per cent of the world’s agro-ecosystems, rainfall is the sole source of water for ….. production.

(A) agricultural

(B) industrial

(C) mass

(D) extractive

Part B **TEXT 4**

CARBON STORAGE

Read and translate the text using a dictionary

Carbon is the basis of life, cycling through the oceans, atmosphere, vegetation, and soil. Through photosynthesis, plants take up carbon as carbon dioxide (CO_2) and convert it to sugar for energy; animals consume the plants; and when both plants and animals die, carbon is returned to the atmosphere as the organisms decay. But ever-increasing emissions of carbon from fossil fuel combustion and deforestation are unbalancing the global carbon cycle; there's less carbon in the soil and vegetation and more in the atmosphere. Because CO_2 in the atmosphere captures the Sun's heat, increasing amounts destabilize the global climate.

It is estimated that prior to the 18^{th} century, increases in atmospheric carbon were less than 0.01 billion metric tons of carbon (GtC) per year. The Industrial Revolution and subsequent global development greatly increased fossil fuel emissions, as did the clearing of forests and other land-use changes that release carbon. Today, human activities emit an estimated 7.9 GtC to the atmosphere annually. The oceans absorb slightly less than 30 per cent of this carbon and terrestrial ecosystems absorb slightly more, but that leaves 40 per cent of yearly emissions to accumulate in the atmosphere.

Reducing anthropogenic carbon emissions is one way to mitigate climate change. Other ways depend on maintaining the ability of ecosystems to absorb carbon. Through photosynthesis, plants provide the most effective and efficient way to recapture and store atmospheric carbon.

* Oceans are the major carbon reservoir or 'sink'. Through chemical and biological processes, including phytoplankton's growth and decay, oceans store roughly 50 times more carbon than is in the atmosphere, mostly as dissolved inorganic carbon.

* Soil and its organic layer store about 75 per cent of total terrestrial carbon. Most of the carbon released to the atmosphere in the last 2 centuries occurred as

grasslands and forests were converted to agricultural uses.

* Forests are the most effective terrestrial ecosystem for recapturing carbon, but not all forests offer the same sequestration benefits. Faster-growing young trees absorb about 30 per cent more carbon than mature wood, but an older forest stores more carbon overall in the soil and in above- and below-ground vegetation than a tree plantation of the same size. Latitude, climate, species mix, and other biological and ecosystem factors also affect carbon flux in forests.

Carbon dioxide (CO_2) concentrations in the atmosphere rose 30 per cent from 1850 to 1998, from 285 parts per million to 366 parts per million. This rise in atmospheric CO_2 levels is largely the result of increased CO_2 emissions from burning fossil fuels. However, changes in use and management of ecosystems have also played a major role by releasing carbon that had been stored in vegetation and soil. About 33 per cent of the carbon that has accumulated in the atmosphere over the past 150 years has come from deforestation and changes in land use.

Climate models tell us that rising carbon concentrations in the atmosphere will alter Earth's climate, affecting precipitation, land and sea temperatures, sea level, and storm patterns. The extent and structure of ecosystems will change as they transform in response to these basic physical parameters. Changing climate will also affect the rate of greenhouse gas emissions from some ecosystems. For example, models suggest that a warmer climate in the Arctic will elevate the rate of decomposition of the vast peat reserves in tundra and taiga ecosystems, increasing the release of CO_2 into the atmosphere.

Elevated atmospheric CO_2 can, in turn, have more direct impacts on ecosystems. Because plants depend on CO_2 for growth, elevated CO_2 concentrations will have a 'fertilizer effect' increasing the growth rate of some plants and changing some of the chemical and physical characteristics of their cells. Some species will benefit more than others, and this in turn will alter the composition of biological communities. Climate change could also have a profound impact on growing patterns and yields in agriculture.

Indicate whether each of the following is true or false by writing 'T' or 'F' in the space provided.

….. 1. Today, human activities emit an estimated 8 GtC to the atmosphere annually.

….. 2. Soil and its organic layer store about 75 per cent of total terrestrial carbon.

….. 3. About 30 per cent of the carbon that has accumulated in the atmosphere over the past 150 years has come from deforestation and changes in land use.

….. 4. Changing climate will also affect the rate of greenhouse gas emissions from some ecosystems.

TEST 5

Part A

STRUCTURE AND WRITTEN EXPRESSION

Directions: In this part each problem consists of an incomplete sentence. Below the sentence are four choices marked (A), (B), (C), and (D). You should find the one choice which best completes the sentence.

1. The importance of water cannot be ….. .

(A) underestimated

(B) overestimated

(C) overemphasized

(D) overstated

2. Poverty, hunger, environmental problems, and diseases could be ….. combated and significantly scaled back if fought with water access as a primary goal.

(A) indirectly

(B) informally

(C) inexplicably

(D) directly

3. Child and maternal mortality rates would drop, and other important issues, including education and gender equality, would indirectly benefit from achievement of the safe drinking water and basic sanitation targets identified …..

the Millennium Development Goals (MDGs).

(A) by

(B) from

(C) at

(D) within

4. Access to improved quantities and quality of water and sanitation ….. directly ….. child deaths.

(A) will ….. reduce

(B) had ….. reduced

(C) were….. reduced

(D) would ….. reduce

5. Diarrhoeal disease alone ….. six thousand children every day.

(A) kill

(B) killed

(C) kills

(D) killing

6. ….. of the human body is water, a key component of all tissues and organs, rapidly flowing in and out of cells through specific water channels, which allow cells to regulate their volume and internal osmotic pressure.

(A) Two-fifths

(B) Two-fourths

(C) One-second

(D) Two-thirds

7. In the ….. body, there are some 100 billion cells – as many cells as there are stars in a galaxy – such as muscle-cells, kidney-cells, nerve-cells and brain-cells.

(A) foreign

(B) human

(C) animal

(D) mammal

8. Water channelling in kidney-cells makes them extremely efficient recycling

plants: by recycling 169 out of the 170 litres of primary urine transported to the kidneys each ….., leaving only 1 litre to be lost as urine to evacuate bodily waste products.

(A) day

(B) week

(C) minute

(D) hour

9. The human body has a high water content, and water molecules respond to magnetic ….. .

(A) fields

(B) elements

(C) compasses

(D) tapes

10. When exposing the human body ….. a strong magnetic field, the hydrogen atoms respond by standing ‘at attention’ and when adding radio waves, patterns of resonance are generated that can be recorded and interpreted.

(A) to

(B) under

(C) into

(D) for

Part B **TEXT 5**

BIOLOGICAL DIVERSITY

Read and translate the text using a dictionary

With an estimated 13 million species on Earth, few people take notice of an extinction of a variety of wheat, a breed of sheep, or an insect. Yet it is the very abundance of species on Earth that helps ecosystems work at their maximum

potential. Each species makes a unique contribution to life.

* Species diversity influences ecosystem stability and undergirds essential ecological services. From water purification to the cycling of carbon, a variety of plant species is essential to achieving maximum efficiency of these processes. Diversity also bolsters resilience – an ecosystem's ability to respond to pressures – offering 'insurance' against climate change, drought, and other stresses.

* The genetic diversity of plants, animals, insects, and micro-organisms determines agro-ecosystems' productivity, resistance to pests and disease, and, ultimately, food security for humans. Genetic diversity is fundamental to human health. From high cholesterol to bacteria fighters, 42 per cent of the world's 25 top-selling drugs in 1997 were derived from natural sources. The global market value of pharmaceuticals derived from genetic resources is estimated at $75-$150 billion. Botanical medicines like Ginseng and Echinacea represent an annual market of another $20-$40 billion, with about 440,000 tons of plant material in trade, much of it originating in the developing world. Not fully captured by this commercial data is the value of plant diversity to the 75 per cent of the world's population that relies on traditional medicine for primary health care.

** Of the estimated 250,000-270,000 species of plants in the world, only 751 are known or suspected to be extinct. But an enormous number of vascular plants – 33,047, or 12.5 per cent – are threatened on a global scale.*

The threat to biodiversity is growing. Among birds and mammals, rates may be 100-1,000 times what they would be without human-induced pressures – overexploitation, invasive species, pollution, global warming, habitat loss, fragmentation, and conversion. Regional extinctions, particularly the loss of populations of some species in tropical forests, may be occurring 3-8 times faster than global species extinctions.

Such localized extinctions may be just as significant as the extinction of an entire species worldwide. Most of the benefits and services provided by species working together in an ecosystem are local and regional. If a keystone species is lost in an area, a dramatic reorganization of the ecosystem can occur. For example,

elephants disperse seeds, create waterholes, and trample vegetation through their movements and foraging. The extinction of elephants in a piece of savanna can cause the habitat to become less diverse and open and cause waterholes to silt up, which would have dramatic repercussions on other species in the region.

To many people, bees are known simply as prodigious honey makers and bats as cohorts of vampires and darkness. Rarely do we recognize that thousands of species of plants could not reproduce without their help. Wind pollinates some plants, but 90 per cent of all flowering plants – including the great majority of the world's food crops – would not exist without animals and insects transporting pollen from one plant to another. Of the world's 100 most important crops, bees alone pollinate more than 70 per cent. Besides food, pollinators help produce other agricultural products that enhance our lives, including dyes, fuelwood, tropical timbers, and textile fibers such as cotton and flax. The diets of many birds and mammals also are based on seeds and fruits produced by pollination.

No wonder, then, that agricultural specialists consider the current worldwide decline in pollinators a cause for alarm. Losses of pollinators have been reported on every continent except Antarctica. Some are on the verge of extinction; pesticides, mites, invasive species, and habitat loss and fragmentation are major killers. The consequences of continued pollinator declines could include billions of dollars in reduced harvests, cascades of plant and animal extinction, and a less stable food supply.

Indicate whether each of the following is true or false by writing 'T' or 'F' in the space provided.

….. 1. The diets of many birds and mammals are not based on seeds and fruits produced by pollination.

….. 2. Elephants disperse seeds, create waterholes, and trample vegetation through their movements and foraging.

….. 3. Of the estimated 250,000-270,000 species of plants in the world, only 750 are known or suspected to be extinct.

TEST 6

Part A

STRUCTURE AND WRITTEN EXPRESSION

Directions: In this part each problem consists of an incomplete sentence. Below the sentence are four choices marked (A), (B), (C), and (D). You should find the one choice which best completes the sentence.

1. Carbon is of fundamental importance to the ….. of agro-ecosystems.

(A) fertility

(B) barrenness

(C) sterility

(D) infertility

2. The organic matter content of ….., and its stability over time, are key indicators of long-term soil quality and fertility.

(A) cement

(B) gravel

(C) stone

(D) soil

3. The level of soil organic matter affects the water retention and tilth of soil, ….. the richness of the soil biota.

(A) as much as

(B) as often as

(C) as soon as

(D) as well as

4. Moreover, the genetic diversity found in traditional crop varieties and in wild species ….. a reservoir of genetic material that breeders can use to develop improved crop and animal varieties.

(A) provided

(B) provides

(C) providing

(D) provide

5. ….. agriculture can arrest this decline and rebuild soil organic matter to its original levels through appropriate crop rotations and the application of nutrients (particularly from organic sources), or through such practices as zero or minimum tillage.

(A) Unsuccessful

(B) Successful

(C) Unsteady

(D) Unfortunate

6. ….., excessive tilling, removing crop residues from fields, and practices that promote soil erosion will accelerate loss of organic matter.

(A) On the one hand

(B) On the right hand

(C) On the other hand

(D) On every hand

7. ….. in agro-ecosystems – in both soil and vegetation – also plays an important role in the global carbon cycle.

(A) Carbon

(B) Carbon monoxide

(C) Carbon dioxide

(D) Carbohydrate

8. Prime sources of carbon dioxide include conversion of forests and woody savannas to agricultural land, and deliberate burning of crop stubble and pastures to control ….. and diseases and promote soil fertility.

(A) pests

(B) rodents

(C) weeds

(D) refuse

9. There is a growing belief that agriculture can play a much greater role in reducing global carbon emissions and ….. increasing carbon storage.

(A) of

(B) at

(C) in

(D) to

10. ….., better cultivation practices, mixing trees into agricultural systems, and planting improved pasture grass can help store more carbon.

(A) Usually

(B) Anyway

(C) Sometimes

(D) Meanwhile

Part B **TEXT 6**

POLLUTION AND CLIMATE CHANGE

Read and translate the text using a dictionary

The effects of pollution put indirect pressure on ecosystems. Acid rain, smog, wastewater release, pesticide and fertilizer residues, and urban run-off all have toxic effects on ecosystems – sometimes at great distances from the activities that gave rise to the pollution. For example, nitrogen release from industry, transportation, and agriculture has seriously altered the global nitrogen cycle, affecting the function of both terrestrial and aquatic ecosystems.

Biologically active, or 'fixed,' nitrogen is an essential nutrient for all plants and animals. But nitrogen release from human sources like fertilizers and fossil fuels now exceeds nitrogen release from natural sources, leaving ecosystems awash in fixed nitrogen. The impacts include an overgrowth of algae in waterways, caused by the fertilizing effect of excess nutrients; acidification of soil and loss of some soil nutrients; loss of plants adapted to natural low-nitrogen conditions; and more smog and greenhouse warming from higher levels of nitrogen oxides in the atmosphere.

Climate change from the build-up of greenhouse gases provides an even more profound example of the potential for pollution to inadvertently disrupt ecosystems on a global scale. Scientists warn that global ecosystems could undergo a major reorganization as Earth's vegetation redistributes itself to accommodate rising temperatures, changes in rainfall patterns, and the potential fertilizing effects of more carbon dioxide (CO_2) in the atmosphere. Computer models estimate that doubling atmospheric CO_2 levels from preindustrial levels, which will likely happen within the next century, could trigger broad changes in the distribution, species composition, or leaf density of roughly one-third of global forests. Tundra areas could also shrink substantially and coastal wetlands shift markedly, among many other effects. It is not at all clear how present ecosystems would weather such significant changes or how these changes might affect their productivity.

Behind all the pressures impinging on ecosystems are two basic drivers: human population growth and increasing consumption. Closely related are a suite of economic and political factors – market forces, government subsidies, globalization of production and trade, and government corruption – that influence what and how much we consume, and where it comes from. Issues of poverty, land tenure, and armed conflict are also significant factors in how people treat the ecosystems they live in and extract goods and services from.

Population growth is in many ways the most basic of environmental pressures because everyone requires at least some minimum of water, food, clothing, shelter, and energy – all ultimately harvested directly from ecosystems or obtained in a way that affects ecosystems. Over the next 50 years, demographers expect the world's population to grow from the current 6 billion to 9 billion or so, with most of this growth taking place in developing nations. Simple arithmetic dictates this will increase the demand for ecosystem products and increase the pressure on global food and water supplies.

Increasing pressure on ecosystems is not simply a matter of population growth, however. In fact, it is more a matter of how much and what we consume. Global increases in consumption have greatly outpaced growth in population for decades.

From 1980 to 1997, the global economy nearly tripled to some U.S. $29 trillion, yet the world population increased only 35 per cent. Per capita consumption levels are rising quickly in many nations as their economies develop; and consumption levels in most industrialized nations are already remarkably high. This higher consumption of everything from paper to refrigerators, to computers, to oil is the result of greater wealth. Personal-income levels have climbed steadily in developed nations and a number of rapidly developing countries such as China, India, and Thailand; and consumption has increased accordingly.

At the same time, the world's economy has become more integrated. Trade has made consumer markets more global. Industries have become more international and less tied to a single place or production facility. This 'globalization' means that consumers derive goods and services from ecosystems around the world, with the costs of use largely separated from the benefits. This tends to hide the environmental costs of increased consumption from those doing the consuming.

For example, a housing contractor in Los Angeles installs copper plumbing but has no way of knowing whether the copper has come from the infamous Ok Tedi mine in Papua New Guinea. The giant mine, which is owned by an international consortium of companies, dumps 80,000 tons per day of untreated tailings into the Ok Tedi River, destroying much of the river's aquatic life and disrupting the subsistence lifestyle of the local Wopkaimin people. Globalization means the eventual homeowners who benefit from the copper have no knowledge of their link with the damaged Ok Tedi watershed and don't suffer the environmental costs.

It's not surprising that those doing the most consuming live in developed countries, but the unevenness of consumption of ecosystem goods and services worldwide is striking. It takes roughly 5 ha of productive ecosystem to support the average U.S. citizen's consumption of goods and services versus less than 0.5 ha to support consumption levels of the average citizen in the developing world. Annual per capita CO_2 emissions are more than 11,000 kg in industrial countries, where there are far more cars, industries, and energy-consuming appliances. This compares with less than 3,000 kg in Asia. On average, someone living in the

developed world spends nearly $16,000 (1995 international dollars) on private consumption each year, compared with less than $350 spent by someone in South Asia and sub-Saharan Africa.

Of course, greater consumption of nutritious food, safe housing, clean water, and adequate clothing is absolutely necessary to relieve poverty in many nations, particularly in the developing world. In the words of the UN's 1948 Universal Declaration of Human Rights, 'Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family'. Accommodating such basic human development, however, is far from the predominant pressure on ecosystems today. Even considering that almost four times as many people live in developing countries as in developed ones, the greatest burden on ecosystems currently originates with affluent consumers in developed countries, as well as wealthy elite in developing countries. It is the pattern of excessive consumption that often accompanies wealth that brings a disproportionate impact on ecosystems.

Humans consume goods and services for many reasons: to nourish, clothe, and house ourselves, certainly. But we also consume as part of a social compact, since each community or social group has standards of dress, food, shelter, education, and entertainment that influence its patterns of consumption beyond physical survival.

Consumption is a tool for human development – one that opens opportunities for a healthy and satisfying life, with adequate nutrition, employment, mobility, and education. Poverty is marked by a lack of consumption, and thus a lack of these opportunities. At the other extreme, wealth can – and often does – lead to excessive levels of material and non-material consumption.

In spite of its human benefits, consumption can lead to serious pressure on ecosystems. Consumption harms ecosystems directly through overharvesting of animals or plants, mining of soil nutrients, or other forms of biological depletion. Ecosystems suffer indirectly through pollution and waste from agriculture, industry, and energy use, and also through fragmentation by roads and other

infrastructure that are part of the production and transportation networks that feed consumers.

Consumption of the major commodities ecosystems produce directly – grain, meat, fish, and wood – increased substantially in the last 4 decades and will continue to do so as the global economy expands and world population grows. Plausible projections of consumer demand in the next few decades suggest a marked escalation of impacts on ecosystems.

Population growth stresses ecosystems because it contributes to increases in both consumption and conversion. Each year, the human population grows by approximately 80 million. Although global fertility rates decreased since the 1950s from 5.0 to 2.7 births per woman, the population will continue to grow. Past high fertility rates created today's pool of more than 1.5 billion people at the prime reproductive age – between 15 and 29 years old; another 1.9 billion are younger than 15. An adjunct to population growth is the significant decrease in mortality. Since the 1950s the global mortality rate has dropped from about 20 to fewer than 10 deaths per year per 1,000 people. In contrast, the seven African countries hardest hit by the AIDS epidemic have actually experienced a decrease in life expectancy because of the high number of deaths caused by the disease.

* Growth is the fastest in less developed nations, among inhabitants most dependent on ecosystems for a subsistence living. Demographers expect 97 per cent of all population growth in the next 5 decades to occur in developing countries.

* In both more and less developed nations, cities are drawing people into ever greater concentrations. Urban regions tend to offer more opportunities for economic development as well as better education and health resources. Although urban areas occupy only about 4 per cent of the Earth's land area, they are home to nearly half the world's population. Currently cities are expansive consumers of ecosystem goods and services and prolific generators of ecosystem-damaging waste – essentially concentrated centres of ecosystem pressure. By 2030, more than 60 per cent of all people are likely to be living in urban areas. In industrial

countries and Latin America, the share is expected to exceed 80 per cent.

* As the population grows in the next quarter century, pressure will increase, especially in countries where arable land is in short supply. In 14 countries, arable land per capita is expected to be less than 0.07 ha – equivalent to an area about 0.25 km^2 – to sustain each human life. Richer countries may supplement their food resources with imports, but poorer countries will have a more difficult time following such a strategy to feed their hungry inhabitants.

Indicate whether each of the following is true or false by writing 'T' or 'F' in the space provided.

….. 1. Computer models estimate that doubling atmospheric CO_2 levels from pre-industrial levels, which will likely happen within the next century, could trigger broad changes in the distribution, species composition, or leaf density of roughly two-thirds of global forests.

….. 2. It is clear how present ecosystems would weather such significant changes or how these changes might affect their productivity.

….. 3. Scientists warn that global ecosystems could undergo a major reorganization as Earth's vegetation redistributes itself to accommodate rising temperatures, changes in rainfall patterns, and the potential fertilizing effects of more carbon dioxide (CO_2) in the atmosphere.

TEST 7

Part A

STRUCTURE AND WRITTEN EXPRESSION

Directions: In this part each problem consists of an incomplete sentence. Below the sentence are four choices marked (A), (B), (C), and (D). You should find the one choice which best completes the sentence.

1. Marine nutrient pollution, especially from nitrates and phosphates, …..

dramatically this century largely because of increased use of agricultural fertilizers and growing discharges of domestic and industrial sewage.

(A) had increased

(B) has increased

(C) have increased

(D) increased

2. Excessive nutrient concentrations in water ….. stimulate excessive plant growth – eutrophication.

(A) may

(B) can

(C) might

(D) could

3. ..... the plant matter becomes more abundant, its decomposition can reduce oxygen concentration in the water to less than the 2 parts per million needed to support most aquatic animal life.

(A) As for

(B) As well

(C) As

(D) As yet

4. This not only jeopardizes native ….., it also jeopardizes human health, livelihoods,

and recreation.

(A) spices

(B) species

(C) specimen

(D) specimens

5. Harmful algal blooms, which consist ….. algae that produce harmful biotoxins, can also be fuelled by excessive nutrient run-off.

(A) of

(B) in

(C) with

(D) –

6. Hypoxia, the depletion of dissolved oxygen, is also related ….. nutrient pollution of coastal waters.

(A) with

(B) to

(C) for

(D) –

7. Fish leave or avoid hypoxic areas and bottom-dwellers ….. shrimps, crabs, snails, clams, starfish, and worms eventually suffocate.

(A) as such

(B) such as

(C) such and such

(D) and such like

8. Current data suggest that hypoxic zones occur most frequently in enclosed waters adjacent to intensively farmed watersheds and major industrial centres ….. the coasts of Europe, the United States, and Japan.

(A) of

(B) off

(C) inside

(D) midway

9. Today overfishing is global, and current harvest trends put fishing, as both a source of food and a source of employment, ….. .

(A) at the risk of

(B) a risk

(C) at risk

(D) –

10. Almost half of all fish stocks ….. at their biological limit and are therefore vulnerable to depletion if fishing intensity increased.

(A) were being fished

(B) are being fished

(C) is being fished

(D) was being fished

Part B **TEXT 7**

POLLUTION AND ECOSYSTEMS

Read and translate the text using a dictionary

Ecosystems are Earth's primary producers, solar-powered factories that yield the most basic necessities – food, fiber, water. In the last century, a growing and rapidly industrializing world has produced greater quantities of common pollutants like household garbage and sewage, and more toxic and persistent contaminants like pesticides, polychlorinated-biphenyls (PCBs), dioxins, heavy metals, and radioactive waste. The environmental costs of contemporary society's pollutant load are difficult to quantify, both because there is little comprehensive data on pollution emissions on a global scale and because the effects of pollutants on ecosystems are often hard to measure. But the problem is surely growing.

Pollutants affect ecosystems in a variety of ways. Pesticides and heavy metals may harm exposed organisms by being acutely toxic or by accumulating in plant and animal tissue through repeated exposures. Pollutants like acid rain can act at a system-wide level, disrupting soil acidity and water chemistry – both critical environmental factors that affect the nutrition and physical development of plants and aquatic life. Multiple pollutants can create a toxic synergy that weakens organisms and gradually reduces an ecosystem's productivity and resilience. All of these effects on ecosystems are much in evidence.

* Although there is greater awareness today of the dangers associated with toxic materials, toxic emissions continue to be significant. For example, the U.S. $37 billion global pesticide market dispenses 2.6 billion kg of active ingredients (pesticides excluding solvents and diluents) on the world's farms, forests, and household gardens, with a variety of collateral effects on wildlife and human health.

* Accidental release of toxic substances like mining waste, or of oil or industrial chemicals, occurs routinely and with devastating effect. In January 2000, 99,000 m^3 of cyanide-laden waste escaped a Romanian gold mine when an earthen tailings dam collapsed; the toxic plume wiped out virtually all aquatic life along a 400-km stretch of the Danube and its tributaries. In 1997, more than 167,000 tons of oil spilled from pipelines, storage vessels, tankers, and other carriers and sources to contaminate the world's marine and inland environments.

* Air pollution from sulfur dioxide (SO_2), nitrogen oxides (NOx) and ground – level ozone still exceeds the 'critical load' – the amount an ecosystem can absorb without damage – over wide areas of Europe, North America, and Asia, with documented effects on crops, forests, and freshwater ecosystems from acid rain. For example, the fraction of healthy Norway spruce, one of the most common conifers in European forests, decreased from 47 per cent in 1989 to 39 per cent in 1995 – an indicator of the continued stress air pollution imposes on Europe's forest ecosystems.

* Fertilizer run-off, human and animal sewage, and inadequately treated industrial waste can add nutrients to freshwater and coastal ecosystems, stimulating algal blooms and depleting the water of oxygen – a process called eutrophication. Oxygen-depleted waters can't support aquatic life. Eutrophication is a growing problem worldwide. A roughly 18,000 km^2 'dead zone' of oxygen-depleted waters in the northern Gulf of Mexico stems from a tripling of the nutrient pollution carried to the coast by the Mississippi River over the last 40 years.

Indicate whether each of the following is true or false by writing 'T' or 'F' in the space provided.

….. 1. Pollutants affect ecosystems in a variety of ways.

….. 2. For example, the fraction of healthy Norway spruce, one of the most common conifers in European forests, decreased from 40 per cent in 1989 to 30 per cent in 1995 – an indicator of the continued stress air pollution imposes on Europe's forest ecosystems.

….. 3. Although there is greater awareness today of the dangers associated with toxic materials, toxic emissions continue to be significant.

….. 4. Oxygen-depleted waters can support aquatic life.

Part A **TEST 8**

STRUCTURE AND WRITTEN EXPRESSION

Directions: In this part each problem consists of an incomplete sentence. Below the sentence are four choices marked (A), (B), (C), and (D). You should find the one choice which best completes the sentence.

1. One such indicator is oxygen ….. in the water – a condition known as hypoxia.

(A) depletion

(B) enrichment

(C) concentration

(D) decomposition

2. Hypoxia, which is often associated with more severe forms of eutrophocation, can be quite harmful to marine organisms, especially sedentary organisms that ….. on the sea floor.

(A) live

(B) leave

(C) reside

(D) dwell

3. ….. historical information on hypoxia is limited, experts believe that the prevalence and extent of hypoxic zones have increased in recent decades.

(A) As though

(B) Although

(C) In case

(D) In order that

4. One of the most well-known examples of hypoxic conditions is the so-called ‘Dead Zone’ ….. of the Mississippi River in the northern Gulf of Mexico.

(A) of the mouth

(B) at the mouth

(C) near the mouth

(D) in the mouth

5. Over the last four decades, the amount of nitrogen delivered to the coast by the Mississippi River – which drains the entire midsection of North America – has …..., helping to create a hypoxic zone that covers 7,800-10,400 km^2 at mid-summer, when the zone is at its worst.

(A) doubled

(B) increased five-fold

(C) tripled

(D) quadrupled

6. Scientists have assembled information ….. harmful algal blooms (HABs) – rapid increases in the populations of algae species that produce toxic compounds.

(A) about

(B) of

(C) on

(D) against

7. In the United States, HABs ….. nearly $ 300 million in economic losses since 1991 from fish kills, public health problems, and lost revenue from tourism and the seafood industry.

(A) has caused

(B) have caused

(C) cause

(D) had caused

8. Information about the ecosystem effects of pathogens, toxic chemicals, and persistent organic pollutants is ….. available than information about nutrient pollution.

(A) more

(B) most

(C) least

(D) less

9. Limited ….. are available from some regions of the world – mostly industrialized countries – where programmes have been established to monitor shellfish beds to guard against consumption of shellfish contaminated with pathogens.

(A) date

(B) dates

(C) datum

(D) data

10. Data from the United States' shellfish monitoring programme show gradually improving conditions; 69 per cent of U.S. shellfish-growing waters ….. for harvest in 1995, up from 58 per cent in 1985.

(A) were approved

(B) are approved

(C) was approved

(D) had been approved

Part B **TEXT 8**

MANAGING FOR ECOSYSTEM HEALTH

Read and translate the text using a dictionary

Well-managed ecosystems can provide a range of benefits over the long term. We can choose to emphasize one or a few benefits over others – timber production over scenery, more food over unbroken forests, hydropower over fish harvests – but each choice has a consequence. Poor management choices in the past have often needlessly degraded ecosystems, yielding fewer goods and services today

when demand is rising quickly. Retaining the productive capacity of ecosystems in the face of the trade-offs we make marks the difference between good and poor management.

But what does it take to manage ecosystems so that they remain resilient and productive, so that they retain – or recover – their health? We are still struggling to find out. There is no standard measure of ecosystem health or resilience. How much productivity should we expect from ecosystems, and how much degradation can we tolerate? How much can we repair that we have broken, and how much will it cost?

Certainly, answering these questions requires fundamental knowledge of ecosystem processes and the relationship between various goods and services. Yet these are not scientific questions alone. They are also matters of societal judgment, of economics, and even of ethics. We may choose to forego harvesting a tract of old-growth forest simply because it is a beautiful and rare habitat, or we may deem it more beneficial used as lumber for housing and left to regenerate as second growth. In either case, the forest may persist in a vital state, but deliver a very different complement of benefits.

Whatever we decide, our opportunities to improve our management of ecosystems are substantial. Our understanding of how ecosystems function, of the links between them and their biological limits, and of their total value has improved significantly in just a few short decades. Satellites and improved measurement techniques have heightened our ability to monitor ecosystems and measure the results of our management. Ecosystem restoration techniques have also advanced, giving the hope that some recovery of productivity is possible. And, more and more, governments and communities have begun to understand the link between ecosystem health and their own economic prosperity and quality of life. Many have already started to define for themselves what sustainable ecosystem management might be – a regional approach to watershed management, perhaps, or land-use restrictions that seek to cluster suburban development rather than encourage sprawl.

The very process of global development, although it places greater pressure on ecosystems, can also be a positive force, changing the way we look at and manage ecosystems. As personal income rises and education and environmental awareness expand, the value we place on intact ecosystems will surely grow as well. This is already in evidence in wealthier nations. The demand for nature-based tourism, for example, has started to increase sharply. Initiatives to preserve farmland and curb suburban sprawl have begun in many urban areas. Ambitious projects to restore threatened ecosystems such as the Rhine River or the Florida Everglades have garnered political and financial backing. These projects are evidence of a growing desire to experience and conserve ecosystems, and a willingness to pay for it.

Despite these positive signs, the challenge of defining equitable and sustainable ecosystem management at a global level should not be minimized. It includes asking ourselves such difficult questions as:

** How can we manage watersheds and water resources in the face of potential increases in demand of up to 50 per cent for irrigation water and up to 100 per cent for industrial water by 2025?*

** Even if irrigation water can be found, how can we intensify our agriculture enough to feed future population without increasing the damage from nutrient and pesticide run-off or without continuing to convert forests and other ecosystems to croplands?*

** How can we continue to supply the roughly 1 m^3 of wood products per year that the average person consumes without decimating existing forests? And what if wood demand doubles in the next 50 years, as some project?*

** How can we lessen the impact of climate change on ecosystems given that CO_2 emissions will likely increase as the global economy grows, at least in the short term?*

** How can we reduce the impact of urban areas – from sprawl to water use, to air pollution and solid waste generation – on surrounding ecosystems as urban population rises to an estimated 5 billion by 2025?*

We have no option but to confront these and similar questions. Our dependence

on ecosystems is growing, not diminishing. The productivity of ecosystems, once it is lost through poor management, is difficult and costly to replace.

Tackling these issues will require new strategies that reach across political boundaries without losing critical local support. These, in turn, will rely on an ever clearer understanding of the real state of global ecosystems – how much we have and how much we stand to lose without better management. The hope is that such background knowledge can help to reveal the trade-offs we have already made and crystallize the management choices that remain to us.

Indicate whether each of the following is true or false by writing 'T' or 'F' in the space provided.

….. 1. Ecosystem restoration techniques are out of date, giving the hope that some recovery of productivity is not possible.

….. 2. The very process of global development, although it places greater pressure on ecotourism, can also be a positive force, changing the way we look at and manage ecotourism.

….. 3. Despite these positive signs, the challenge of defining equitable and sustainable ecosystem management at a global level should be minimized.

….. 4. We may choose to forego harvesting a tract of old-growth forest simply because it is a beautiful and rare habitat, or we may deem it more beneficial used as lumber for housing and left to regenerate as second growth.

….. 5. Suppose you were transported to another planet where no one had heard of sustainable ecosystem management. In this locale, it would be useful.

Part A TEST 9

STRUCTURE AND WRITTEN EXPRESSION

Directions: In this part each problem consists of an incomplete sentence. Below the sentence are four choices marked (A), (B), (C), and (D). You should find the one choice which best completes the sentence.

1. Different types of tourism differ in their benefits to local economies as well as in ….. environmental impacts.

(A) its

(B) their

(C) her

(D) his

2. In the Caribbean, ….., most of the prosperous hotels are large resorts; nature-based tourism (ecotourism) is a small niche market.

(A) in fact

(B) for a fact

(C) for example

(D) in actual fact

3. Worldwide, relatively ….. local communities have realized significant benefits yet from nature-based tourism on their own lands or in nearby protected areas.

(A) little

(B) a little

(C) a few

(D) few

4. The participation of local communities in nature tourism ….. by a lack of relevant knowledge and experience, lack of access to capital for investment, inability to compete with well-established commercial operations, and simple lack of ownership rights over the tourism destinations.

(A) has been constrained

(B) have been constrained

(C) had been constrained

(D) would have been constrained

5. Protected areas often supply the most valuable part of the nature tourism experience, but capture ….. of the economic value of tourism in return.

(A) little

(B) less

(C) least

(D) –

6. ….. many governments have successfully increased tourist numbers by marketing their country's nature tourism destinations, most have not invested sufficiently in managing those natural assets or in building the infrastructure needed to support nature tourism.

(A) Although

(B) Thereinto

(C) Thereunder

(D) Therefore

7. Thus sensitive sites of ecological or cultural ….. have been exposed to risk of degradation by unregulated tourism development, too many visitors, and the impact of rapid immigration linked to new jobs and business opportunities.

(A) cost

(B) price

(C) value

(D) worth

8. Tourism has a tremendous potential to bring economic prosperity and development, including environmental improvements, to the destinations in which …..operates.

(A) you

(B) she

(C) he

(D) it

9. However, poorly planned and managed tourism ….. harm the very resources on which it is based.

(A) may

(B) must

(C) can

(D) ought to

10. Since the success of tourism in the Caribbean ….. on the appeal of excellent beaches and a high-class marine environment suitable for a range of outdoor activities, this inattention to the harmful impacts of tourism itself directly threatens the industry's growth in the region.

(A) has been built

(B) had been built

(C) was built

(D) is built

TEXT 9

Part B **ENDANGERED TREES**

Read and translate the text using a dictionary

Survival of the world's estimated 100,000 tree species is threatened by conversion of forest land to other uses, timber harvesting, fire, pest attack, and ecosystem simplification resulting from forest management. WCMC has compiled a list of threatened species, assessed according to the 1994 IUCN categories of threat. Altogether, more than 8,700 tree species, almost 9 per cent of the world total, are at risk.

A major threat is posed by the deliberate or accidental introduction by humans of non-native plants and animals to forest habitats. These can threaten the survival of native species by attacking them, competing with them for food and space, or altering local ecosystems to the point that they can no longer support indigenous tree populations. The number of non-native species are, thus, an indicator of the degree of potential 'assault' on native flora. In North America, the highest concentrations of non-native species are found around ports, along major transportation routes, and in fertile agricultural regions that have proved favourable to both introduced crops and their pests. Densely forested taiga regions away from major human settlements appear to be little affected, and the conifer forests of the

Southeast have proved relatively resistant to invasive species.

Forests harbour much of the world's biological diversity. Diverse species found only in forest habitats are sources of new pharmaceuticals, genetic resources, and non-timber forest products such as resins, fruits, vines, mushrooms, and livestock fodder. Even more important, all other forest goods and services depend to some extent on the diversity of forest species. The condition of biodiversity is thus a useful indicator of the aggregate condition of the forest ecosystem.

Forests play a central role in the global carbon cycle. Trees capture carbon from the atmosphere as they grow and store it in their tissues. Because of their great biomass, global forests comprise one of the largest terrestrial reservoirs or 'sinks' of carbon. Forests store 39 per cent (471 – 929 GtC) of the 1,213 – 2,433 GtC that PAGE researchers calculated are stored in all terrestrial ecosystems. By way of comparison, grasslands store about 33 per cent of terrestrial carbon, yet cover nearly twice as much area as forested regions.

Forests store more carbon than any other terrestrial ecosystem – nearly 40 per cent of total carbon stored. Deforestation and forest degradation are responsible for approximately 20 per cent of annual carbon emissions. The condition of forest ecosystems from the standpoint of carbon storage is clearly declining, but with appropriate economic incentives, this trend could potentially be reversed. However, there are trade-offs to be borne in mind: more carbon is sequestered by young, fast-growing trees than by mature trees. Simply managing forests to store maximum carbon might encourage replacement of many existing old-growth forests with plantations, which would clearly jeopardize biodiversity, tourism, and other services that natural forests provide.

Forests provide several valuable services in relation to watershed protection. They physically stabilize the upper reaches of watersheds. Tree roots 'pump' water out of the soil to be used by the plant, thereby reducing soil moisture and the likelihood of mud slides; root structures increase the shear strength of soil and help prevent landslides. Forests also tend to moderate the rate of run-off from precipitation, reducing flows during flooding and increasing flows during drier

times.

Forest cover also helps to maintain drinking water supplies. Finally, forest cover affects the total amount of water available in a watershed. In many regions, forest loss will increase net water discharge because less water is transpired to the atmosphere. In other regions, however, forest loss can decrease net discharge. In cloud forests, for example, forests play a role in directly condensing or 'stripping' water from moisture-laden air and making it available for discharge. In other regions, precipitation is dependent in part on the transpiration of water-laden air from the local forest. For example, climate researchers have estimated that temperatures are about 1˚C higher and precipitation is 30 per cent lower in large deforested patches in the Amazon.

Overall, forest loss has certainly impaired the world's watersheds to a significant degree. A 1998 analysis by WRI found that nearly 30 per cent of the world's major watersheds have lost more than three-fourths of their original forest cover, and 10 per cent have lost more than 95 per cent of their original forest cover. Perhaps a more revealing measure of the condition of forests for watershed protection today is the status of montane forests. These forests play an especially important role in the hydrological processes of watersheds by controlling soil erosion in steeply sloping mountains and sometimes 'capturing' water in cloud forests.

In temperate regions, the extent of montane forest has increased in recent years, except in the mature old-growth coniferous forests of the Pacific Northwest of North America, Chile, Tasmania, and southern New Zealand. Highly prized for producing lumber, these forests may have been reduced to less than half their original extent by logging. In the tropics, montane forests are under even greater pressure. According to FAO, tropical montane forests were disappearing at a rate of 1.1 per cent/year in the 1980s, which exceeded the rate of loss for all other tropical forest types.

Forests retain water in soil, regulate flow, influence precipitation, and filter drinking water. The water purification service alone has high economic value in certain regions. Forest loss in general has eroded the capacity of the world's forests

to protect watersheds and provide water-related services, and this decline will likely continue as pressures on forests mount. Nearly 30 per cent of the world's major watersheds have lost more than three-quarters of their original forest. Montane forests, which are particularly important in protecting watersheds, have suffered extensively. In spite of the importance of forests for vital water services, these services are rarely factored into land-management decisions.

Indicate whether each of the following is true or false by writing 'T' or 'F' in the space provided.

….. 1. Forests store more carbon than any other terrestrial ecosystem – nearly 50 per cent of total carbon stored.

….. 2. Forests retain water in soil, regulate flow, influence precipitation, and filter drinking water.

….. 3. Forests play a central role in the global hydrogen cycle.

….. 4. Finally, forest cover affects the total amount of water available in a watershed.

WORDLIST

acid rain – Rain, containing harmful acids.
activity – Activity is a situation in which a lot of things are happening or being done.
adapt – If you adapt to a new situation or adapt yourself to it, you change your ideas or behaviour in order to deal with it successfully.
aerobe – A bacterium requiring oxygen for life.
agriculture – Agriculture is farming and the methods that are used to raise and look after crops and animals.
AIDS – Acquired Immune Deficiency Syndrome (a very serious disease that stops your body from defending itself against infections, and usually causes death).
alga (pl. algae) – Any of a numerous class of plants that grow in sea and fresh water.
arable – Fit for ploughing and tillage.
area – An area is a particular part of a city, a country, or the world.
atmosphere – A planet's atmosphere is the layer of air or other gas around it.

barrier – A barrier is any fence or structure erected to bar passage.
balance – A state of equilibrium.

calorie – A calorie is a unit of measurement for the energy value of food.
carbon – Carbon is a chemical element that diamonds and coal are made of. All living things contain carbon.
carbon dioxide – Carbon dioxide is a gas. Animals and people breathe out carbon dioxide.
carbonate – To carbonate means to charge (water) with carbon dioxide.
chaos – Chaos is a state of complete disorder and confusion.
chlorine – Chlorine is a strong-smelling gas that is used to disinfect water and to make cleaning products.
civilization – A civilization is a human society which has its own highly developed social organization, culture, and way of life which makes it distinct from other societies.
clam – A clam is a kind of shellfish.
coastal – Coastal means in the sea or on the land near a coast.
combustion – Combustion is the act of burning something or the process of burning.
community – A group of animal and plant species living together and having close interactions.
conservationist – A conservationist is someone who cares greatly about conservation.
consume – To consume an amount of fuel, energy, or time means to use it up.
control – To control a machine, process, or system means to make it work in the way that is required.

crab – A crab is a sea creature with a flat round body covered by a shell, and five pairs of legs with large claws on the front pair.
crust – The outer layers of the Earth's rocks.

deforest – Clear of forests.
demography – The science of vital statistics relating to deaths, births, etc.
deplete – Exhaust by drawing away, as resources, strength, vital powers.
desert – A desert is a large area of land where there is very little water or rain and very few plants.
destruction – Destruction is the act of destroying something.
diet – A diet is the food that a person or animal eats regularly.
dire – Dire is used to emphasize how serious or terrible a situation is.
disappear – If someone or something disappears, they go where you can no longer see them.
disease – A disease is an illness in living things that is caused by infection or by a fault inside them.
disrupt – To disrupt an activity or system means to prevent it from continuing normally**.**
drought – A drought is a long period of time during which no rain falls.

earthquake – An earthquake is a shaking of the ground caused by the movement of the earth's crust.
ecologist – An ecologist is a person who studies the pattern and balance of relationships between plants, animals, people, and their environment.
Ecology – Ecology is the study of the relationships between plants, animals, people, and their environment, and the balances between these relationships.
ecosphere – The part of the universe habitable by living organisms.
ecosystem – An ecological community.
ecotourism – Organized holidays/vacations to places that not many people have the chance to see, designed so that the tourists damage the environment as little as possible, especially when some of the money they pay is used to protect the local environment and animals.
emission – When there is an emission of gas or radiation, it is released into the atmosphere.
encroach – If someone or something encroaches on an area of land, they gradually occupy more and more of it.
environment – The environment is the natural world of land, sea, air, plants, and animals that exists around towns and cities.
environmentalist – A person who works toward protecting the environment from destruction or pollution.
erosion – Erosion is the gradual destruction or removal of something.
eutrophication – The depletion of the oxygen in water by algae, caused by excess phosphates, nitrates, etc.
extinct – A species of animals that is extinct no longer has any living members.

FAO – Food and Agriculture Organization of the United Nations.
farming – Farming is the activity of growing crops or raising animals on a farm.
fishery – A fishery is an area of the sea where fish are caught in large quantities.
flood – If there is a flood, a large amount of water covers an area which is usually dry, for example when a river overflows.
fragile – Easily spoiled, harmed, or broken.

global warming – The theory that the climate of the Earth is gradually becoming warmer as a result of the greenhouse effect.
globe – You can refer to the Earth as the globe.
grave danger – Danger that is grave is very serious and worrying.
greenhouse effect – The global heating effect that is caused when the atmosphere is more transparent to incoming short-wave solar radiation than it is to outgoing long-wave radiation.
GtC – Billion tons or gigatons of carbon.

habitat – The habitat of an animal or plant is the natural environment in which it normally lives.
harm – To harm something means to damage it or make it less effective or successful.
hectare – A metric measure of land, 10,000 square metres or about 2 acres. *Abbr*., **ha**.
herbicide – Herbicide is a selective weed killer.

industrial – You use 'industrial' to describe things which relate to industry or are used in it.
insect – Any member of a class of tiny winged invertebrates.
insecticide – A substance to kill insects.
irrigation –The artificial increase of water supply.
IUCN – The World Conservation Union.

keep from – To keep someone or something from doing a particular thing means to prevent them from doing it.
kill – When someone or something kills a person, animal or plant, they cause the person, animal, or plant to die.
kind – If you talk about a particular kind of thing, you are talking about one of the classes or sorts of that thing.

land – Land is an area of ground with few or no buildings on it.
latitude – The latitude of a place is its distance to the North or South of the Equator.
limestone – Limestone is a white-coloured rock which is used for building and making cement.

mammals – Mammals are particular types of animals.

man – 1 a mammal of the genus *Homo*;
2 a person; a human being;
3 the human race; mankind.
man-made – Something that is 'man-made' is made by people, rather than formed naturally.
management – Act of managing.
MDGs – Millennium Development Goals.
Mha – Million hectares.
melt – When something melts or when you melt it, it changes from a solid to a liquid because it has been heated.
meteorite – A meteorite is a large piece of rock or metal from space that has landed on the Earth.
monitor – A monitor is a machine that is used to check or record things.
mortality – Mortality is the fact that all people must die.
MtC – Metric tonne of carbon.

nitrate – A chemical compound of nitric acid, used as a fertilizer.
nitric acid – A corrosive compound of nitrogen, used in making dyes, explosives, plastics, etc.
nitrogen – A colourless, odourless, gaseous element, No. 7, symbol **N**, forming four-fifths of the volume of the Earth's atmosphere.
number – The sum of an aggregation of persons or things.
nutritious – Food that is 'nutritious' contains substances which help your body to be healthy.

occurrence – An occurrence is something that happens.
ocean – The ocean is the body of salt water covering three-fourths of the Earth's surface.
oxide – A compound of oxygen with another element.
oxygen – A gaseous element, No. 8, symbol **O**, colourless, odourless, and essential to all life.
ozone – An ionized form of oxygen.

PAGE – Pilot Analysis of Global Ecosystems.
plankton – The microscopic animals and plants that drift freely in natural bodies of water and on which most marine life feeds.
pole –The Earth's poles are the two opposite ends of its axis.
pollute – To pollute the water, air, or atmosphere means to make it dirty and dangerous to live in or to use.
pressure (C,U) – A condition of the air in the Earth's atmosphere, which affects the weather.
protein – Protein is a substance found, for example, in meat, eggs, and milk. You need protein in order to grow and be healthy.

quantity – A quantity is an amount that you can measure or count.

rainforest – A rainforest is a thick forest of tall trees which is found in tropical areas where there is a lot of rain.
Romanian – Of or pert. to Romania, its people, or their language. Also, Rumanian, Roumanian.

savanna, *savannah* – A large flat area of grassy land, especially in Africa.
search for food – If you search for food, you look carefully for it.
shellfish – A shellfish is a small creature that lives in the sea and has a shell.
shoreline – The line where water and shore meet.
shrimp – A shrimp is a small shellfish with a long tail and many legs.
snail – A snail is a small animal with a long, slimy body and a spiral-shaped shell.
soil – Soil is the top layer of earth, which plants can grow in.
solar energy – The energy which can be produced from the Sun's rays or the effects of the Sun's rays or gravity.
species – A species is a class of animals or plants whose members have the same main characteristics and are able to breed with each other.
starfish – A starfish is a flat, star-shaped creature with five arms that lives in the sea.
sulfur, *sulphur* – A non-metallic chemical element, No. 16, symbol **S**, used in medicine, gunpowder, etc.
sunlight – Light from the Sun.
survive – Continue to live.

toxin – A poisonous product of micro-organisms.
tree – A large perennial plant with a single permanent woody trunk.
tundra – A level, treeless plain of Arctic regions.

unprecedented – Having no precedent.

vanish – If something vanishes, it disappears suddenly.
vegetation – Vegetation is plant life in general.

waste – Waste is also material which has been used and is no longer wanted, for example because the valuable or useful part of it has been taken out.
water – Water is the clear, thin liquid that has no colour and no taste when it is pure.
watershed – A ridge off which water flows or drains.
WCMC – World Conservation Monitoring Centre.
wild – Animals living in the wild are living in their natural surroundings and are not being looked after by people.
worm – A worm is a small animal with a long thin body, no bones, and no legs, which lives in the soil.
WRI – World Resources Institute.

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